58. (Once amended) Process in accordance with Claim 1, characterized in that the regenerating bath in Step k) contains between 0.5 and 2 g/l of zinc sulphate.

59. (Once amended) Process in accordance with Claim 1, characterized in that the regenerating bath in Step k) contains approximately 1 g/l of zinc sulphate.

REMARKS

I. Status of Claims

Claims 1-12, 14-21, 23-59 and 62 are pending in the instant application and have been examined. Claims 13, 43, 44, 60 and 61 stand rejected under 35 U.S.C. §112, second paragraph, "as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention." Official Action, page 3. Claims 1-16, 18-24 and 26-34 stand rejected under 35 U.S.C. §103(a) as being obvious over Manufacturing Processes, Viscose Process, Chapter 8, Introductory Textile Science, pages 82-85, by Joseph ("the Joseph reference") in view of U.S Patent No. 2,046,670 to Beattey ("the Beattey '670 Patent") and British Patent GB 2 062 652 to Marini et al. ("the Marini et al. '652 Patent"). Claims 17 and 25 also stand rejected under 35 U.S.C. §103(a) as obvious over the Joseph reference, the Marini et al. '652 Patent and the Beattey '670 Patent as applied to claim 1 above, and further in view of U.S. Patent No. 5,482,776 to Nishiyama et al. ("the Nishiyama et al. '776 Patent"). Claims 37-42 also stand rejected under 35 U.S.C. §103(a) as obvious over the Joseph reference, the Marini et al. '652 Patent and the Beattey '670 Patent as applied to claims 1 and 33. Claims 45-53 also stand rejected under 35 U.S.C. §103(a) as obvious over the Joseph reference, the Marini et al. '652 Patent and the Beattey '670 Patent as applied to claim 37. Claims 54-62 also stand rejected under 35 U.S.C. §103(a) as obvious over the Joseph reference, the Marini et al. '652 Patent and the Beattey '670 Patent. Claims 35 and 36 stand objected to as being dependant upon a rejected base claim, but would be allowable if

rewritten in independent form to include all of the limitations of the base claim and any intervening claims. Claims 43 and 44 would be allowable if amended to overcome the rejections under 35 U.S.C. §112, second paragraph.

Claims 1, 4, 6-8, 11, 16-18, 20-23, 25, 26, 28, 31-33, 43, 44, and 56-59 have been amended. Claims 13, 22, 60 and 61 have been cancelled. Pursuant to 37 C.F.R. § 1.121, attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attached page is captioned "Version With Markings To Show Changes Made."

Reconsideration of the application based on the amendments and arguments set forth herein below is respectfully requested.

II. Information Disclosure Statement Compliance with 37 CFR 1.98(a)(3)

Applicants take note that the Patent Office has not considered references B2 and B3 because these references are not in the English language and a concise explanation of the relevance of each of these references by the individual designated in 37 CFR 1.56(c) most knowledgeable about the content of the information were not provided. Applicants will make every effort to obtain either English translations or concise explanations of the relevance of each references B2 and B3 and submit same to the Patent Office at such time.

III. Response to Objection to Specification

The Patent Office states that '[t]he use of the trademark BEROL® has been noted in this application. It should be capitalized wherever it appears and be accompanied by the generic terminology." Official Action, page 2.

The specification has been amended to include a generic description for and accompanying the trademark BEROL®. No new matter has been introduced by this purely formal amendment.

IV. Response to the Rejections Under 35 U.S.C. §112, Second Paragraph

The Patent Office states claims 13, 60 and 61 "contains the trademark/trade name 'Berol.'" Official Action, page 3. The Patent Office continues, "[w]here a trademark or trade name is used in a claim as a limitation to identify or describe a particular material or product, the claim does not comply with the requirements of 35 USC 112, 2nd paragraph," Official Action, page 3.

Claims 13, 60 and 61 have been deleted, rendering the rejection of these claims under 35 U.S.C. §112, second paragraph, moot.

The Patent Office states "[c]laims 43 and 44 are indefinite because it is unclear if the backing fabric, the pile or both are comprised of the inventive cellulose fiber." Official Action, page 3.

Claim 43 and 44 have been amended to clarify that it is the pile and not the backing fabric that contains the fibers according to claims 43 and 44 of the present invention.

Support for the amendments to claims 43 and 44 are found in the claim itself. Additional support is found on page 8, lines 21-23. No new matter is introduced by the amendments to claims 43 and 44.

V. Response to the Rejections Under 35 U.S.C. §103(a)

A. The Examiner's Rejections

The Patent Office has rejected claims 1-16, 18-24 and 26-34 under 35 U.S.C. §103(a) based on the Joseph reference in view of the Beattey '670 Patent and in view of the Marini et al. '652 Patent. The Patent Office's basis for this rejection is set forth in detail at pages 4-8 of the last Official Action and summarized by applicants in Amendment B at pages 12-14. Applicants respectfully traverse the rejection and submit the comments hereinbelow.

The Patent Office has also rejected Claims 17 and 25 under 35 U.S.C. §103(a) as unpatentable over the Joseph reference, the Marini et al. '652 Patent, the Beattey '670 Patent and U.S. Patent No. 5,482,776 to Nishiyama et al. ("the

Nishiyama et al. '776 Patent). The Patent Office's basis for this rejection is set forth in detail at page 7 of the last Official Action and summarized by applicants in Amendment B at page 14. Applicants respectfully traverse the rejection and submit the comments hereinbelow.

The Patent Office has also rejected Claims 37-42 under 35 U.S.C. §103(a) as unpatentable over the Joseph reference, the Marini et al. '652 Patent, and the Beattey '670 Patent, as applied to claims 1 and 33 and as set forth at page 8 of the last Office Action. Applicants respectfully traverse the rejection and submit the comments hereinbelow.

The Patent Office has also rejected Claims 45-53 under 35 U.S.C. §103(a) as unpatentable over the Joseph reference, the Marini et al. '652 Patent, and the Beattey '670 Patent, as applied to claim 37 above. Applicants respectfully traverse the rejection and submit the comments hereinbelow.

The Patent Office has also rejected Claims 54-62 under 35 U.S.C. §103(a) as unpatentable over the Joseph reference, the Marini et al. '652 Patent, and the Beattey '670 Patent. The Patent Office states the limitations of claims 54 and 55 were previously examined on original claim 3, and the limitations of claims 56-62 were previously examined in original claims 20-22 and 24, and therefore, these claims are rejected for analogous reasons. Applicants respectfully traverse the rejection and submit the comments hereinbelow.

B. The Applicants' Arguments

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of

success must both be found in the prior art and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

The Patent Office characterizes the Joseph reference as disclosing a process of making rayon fibers. The Patent Office contends the Joseph reference "teaches the process of claim 1, with the exception of (a) wood pulp shoots no older than one year of deciduous trees or conifers, (b) the ripening maturity of 5-30 Hottenroth at each aging step, (c), twisting the fibers coagulated fibers, and..." Last Official Action, page 5.

Applicants have amended claim 1 so as to more clearly and distinctly claim the method of the present invention. Namely, applicants have separated the previously combined steps in claim 1a) into individual steps so as to more clearly define the novel steps of the claimed method. No new matter was added by this amendment as support can be found in the specification and the claim itself. Amended claim 1 claims a process for manufacturing cellulose fibre having fibre-parallel lamellae with spacing between 1 nm and 5 μm from hydrate cellulose, comprising steps a) through q) and beginning with selecting shoots no older than 1 year of deciduous trees or conifers; deriving wood pulp from the shoots; treating the wood pulp with an alkali metal hydroxide solution to obtain an alkali cellulose; pressing...etc.

Selecting shoots no older than 1 year of deciduous trees or conifers and deriving wood pulp from these particular shoots are critical first steps in the process of claim 1. Selection and use of shoots no older than 1 year is necessary with the claimed process in order to fulfill the purpose of the process as stated in the preamble, that is, to manufacture a cellulose fibre having fibre-parallel lamellae with spacing between 1 nm and 5 μm. See Amendment B at pages 16-18 for a description of the connection between selecting shoots no older than 1 year and producing a fiber having nano-lamellae microstructure. The selection of shoots of any other age thwarts the object of the process and therefore the selection of shoots no older than 1 year is a critical element of the process. Thus, altering it affects the method step in a manipulative sense.

None of the prior art, either alone or in combination teach or suggest all the elements of amended claim 1. In particular, none of the prior art, either alone or in combination, teach or suggest the steps of selecting shoots no older than 1 year of deciduous trees or conifers or deriving wood pulp from the selected shoots. By the Patent Office's own admission, the Joseph reference, the Patent Office's primary reference, fails to recognize the benefits of selecting shoots no older than 1 year of deciduous trees or conifers and using these specifically selected shoots for deriving a wood pulp. These deficiencies are not compensated for by either of the other two references cited by the Patent Office, the Marini et al. '652 patent or the Beattey '670 patent.

Thus, the cited references fail to disclose or suggest each and every element of the claimed invention. These aspects of the present invention, which are embodied in claim 1, are absent from the cited references. Thus, the cited references, neither alone nor in combination, do not disclose or suggest each and every element of the claimed invention.

Applicants respectfully submit that the Patent Office has not presented a prima facie case of obviousness. As such, applicants respectfully request that rejection of claim 1 under 35 U.S.C. §103 be withdrawn. Applicants further submit that claim 1 is now in condition for allowance and respectfully solicit the same.

Applicants further submit that the addition of the Nishiyama et al. '776 patent to the Joseph reference, the Marini et al. "652 patent and the Beattey '670 patent does not supplement the Patent Office's contention that claims 17 and 25 are obvious under 35 U.S.C. §103(a) over the cited references. More particularly, the additional reference applied in the rejection of claims 17 and 25, namely the Nishiyama et al. '776 patent, does not teach or suggest the steps of selecting shoots no older than 1 year of deciduous trees or conifers or deriving wood pulp from the selected shoots.

Since none of the four references cited in the rejection of claims 17 and 25 teach or suggest the steps of selecting shoots no older than 1 year of deciduous

trees or conifers or deriving wood pulp from the selected shoots, applicants respectfully submit that the Patent Office has not presented a prima facie case of obviousness with respect to claims 17 and 25. As such, applicants respectfully request that rejection of claims 17 and 25 under 35 U.S.C. §103 be withdrawn. Applicants further submit that claims 17 and 25 are now in condition for allowance and respectfully solicit the same.

Claims 2-12, 14-16, 18-21, 23-24, 26-32, 54-59 and 62 depend either directly or indirectly from claim 1. Since the Joseph reference, the Marini et al. '652 Patent, and the Beattey '670 Patent do not teach or suggest, either alone or in combination, all the elements of claim 1, the Joseph reference, the Marini et al. '652 Patent, and the Beattey '670 Patent also do not teach or suggest all the claim limitations of these dependent claims either. As such, applicants respectfully request that rejection of claims 2-12, 14-16, 18-21, 23-24, 26-32, 54-59 and 62 under 35 U.S.C. §103 be withdrawn. Applicants further submit that claim 2-12, 14-16, 18-21, 23-24, 26-32, 54-59 and 62 are in condition for allowance and respectfully solicit the same.

Claims 33-42 and 45-53 also depend either directly or indirectly from claim 1. Since the Joseph reference, the Marini et al. '652 Patent, and the Beattey '670 Patent do not teach or suggest, either alone or in combination, all the elements of claim 1, the Joseph reference, the Marini et al. '652 Patent, and the Beattey '670 Patent also do not teach or suggest all the claim limitations of these dependent claims either. Further, the Patent Office states that the age of the wood shoots is given patentable weight in these product claims (claims 33-53). The Patent Office further states that the rejections on these product claims "will be withdrawn upon an amendment positively reciting that the fibers are 'obtained' or produced by the process of claim 1. " See Official Action at page 6.

Applicants have amended claim 33 to claim cellulose fibre produced by a process in accordance with claim 1. Claims 34-42 and 45-53 depend either directly or indirectly from claim 33. As such, applicants respectfully request that rejection of claims 33-42 and 45-53 under 35 U.S.C. §103 be withdrawn. Applicants further

submit that claims 33-42 and 45-53 are now in condition for allowance and respectfully solicit the same.

VI. Allowable Subject Matter

The Patent Office states "[c]laims 43 and 44 would be allowable if rewritten or amended to overcome the rejections under 35 U.S.C. 112, second paragraph, set forth in this Office action." Official Action, page 7.

Claims 43 and 44 have been amended to read that it is the pile and not the backing fabric that contains the fibers according to claims 43 and 44 of the present invention. Applicants submit that amended claims 43 and 44 are now in condition for allowance and respectfully solicit the same.

CONCLUSION

In light of the above amendments and remarks, it is respectfully submitted that the present application is now in proper condition for allowance, and such action is earnestly solicited.

If any small matter should remain outstanding after the Patent Examiner has had an opportunity to review the above Remarks, the Patent Examiner is respectfully requested to telephone the undersigned patent attorney in order to resolve these matters and avoid the issuance of another Official Action.

DEPOSIT ACCOUNT

The Commissioner is hereby authorized to charge any fees associated with the filing of this correspondence to Deposit Account No. **50-0426**.

Respectfully submitted,

JENKINS, WILSON & TAYLOR, P.A.

Date: 6-16-03 By: Richard E. Jenkins

Richard E. Jenkins
Registration No. 28,428

1328/3 REJ/JD/cht

Customer No. Bar Code:

25297
Patent Trademark Office

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE SPECIFICATION:

The paragraph beginning at page 6, line 13, has been amended as follows:

--The ripened crumbs are subsequently treated under application of the conventional wet sulphide process in order to sulphidise the cellulose. The wet sulphide process is preferably carried out in a solution containing carbon disulphide, sodium hydroxide and BEROL, a surfactant. The preferred carbon disulphide content of the solution is between 150 and 250 g/l, particularly favourable is between 180 and 210 g/l, and the preferred content of sodium hydroxide is between 250 and 350 g/l, particularly favourable is between 280 and 320 g/l, and the preferred content of BEROL is between 100 and 200 g/l, particularly favourable is approx. 150 g/l. The most preferable type of BEROL surfactant used for this process step is one of the commercially available products from Berol-Kemie Ltd., 44401 Stennungsund, Sweden.--

The paragraph beginning at page 7, line 7, has been amended as follows:

--The deaerated spinning solution is introduced by means of spinnerets into a regenerating bath, preferably at a temperature of between 35 and 45°C, and ideally at a temperature of approx. 40°C. A suitable regenerating bath contains between 70 and 160 g/l of sulphuric acid, preferred is between 90 and 140 g/l, and approx. 120 g/l is ideal, plus between 0.3 and 4 g/l of zinc sulphate, preferred is between 0.5 and 2 g/l, and approx. 1 g/l is ideal, plus between 0.05 and 1 g/l of BEROL, a surfactant, preferred is between 0.1 and 0.7 g/l, and approx. 0.4 g/l is ideal. The most preferable type of BEROL surfactant used for this process step is one of the commercially available products from Berol-Kemie Ltd., 44401 Stennungsund, Sweden. The spinnerets used can be oval to long-slit-shaped, and are heated to keep them within a preferred temperature range of 55 - 75°C, particularly favourable is between 65 and 70°C, and approx. 67°C is absolutely ideal.--

IN THE CLAIMS:

1. (Twice amended) A process to manufacture a cellulose fibre having fibre-parallel lamellae with spacing between 1 nm and 5 µm from hydrate cellulose, the method comprising the following steps:

a) selecting shoots no older than 1 year of deciduous trees or conifers;

b) deriving wood pulp from the shoots;

c)[a)] treating the wood pulp derived from shoots no older than 1 year of deciduous trees or conifers with an alkali metal hydroxide solution to obtain an alkali cellulose;

d) [b)] pressing out superfluous alkali metal hydroxide solution from the alkali cellulose;

e)[c)] shredding the alkali cellulose into alkali cellulose crumbs;

f) [d)] ripening the alkali cellulose crumbs to a maturity of between 5° and 30° Hottenroth to form ripened crumbs;

g) [e)] treating the ripened crumbs with a wet sulphide process to form sulphadised cellulose;

h) [f)] rinsing and diluting of the sulphadised cellulose with water to obtain a spinning solution;

i) [g)] ripening of the spinning solution to a maturity of between 5° and 30° Hottenroth;

j) [h)] filtering and downstream deaerating the spinning solution;

k) [i)] injecting the spinning solution into a regenerating bath under application of spinnerets;

l) [j)] stripping the coagulating fibres off of the spinnerets with simultaneous twisting in order to obtain twisted fibres;

m) [k)] dehydrating the twisted fibres;

n) [l)] desulphurising the twisted fibres;

o) [m)] washing the twisted fibres with water;

p) [n)] predehydrating the twisted fibres; and

g) [o)] drying the twisted fibres, whereby the fibres have fibre-parallel lamellae with spacing between 1 nm and 5 µm.

4. (Once amended) Process in accordance with Claim 1, characterized in that the alkali metal hydroxide solution used to treat the wood pulp in Step c) [a] is a sodium hydroxide solution which contains between 150 and 350 g/l of sodium hydroxide.

6. (Once amended) Process in accordance with Claim 1, characterized in that treatment of the wood pulp in Step c) [a] is carried out at a temperature ranging between 15°C and 25°C.

7. (Once amended) Process in accordance with Claim 1, characterized in that the shredding process of the alkali cellulose in Step e) [c] comprises a course comminution step and a fine comminution step.

8. (Once amended) Process in accordance with Claim 1, characterized in that the alkali cellulose crumbs in Step f) [d] are ripened at a temperature ranging between 60°C and 75°C.

11. (Once amended) Process in accordance with Claim 1, characterized in that the alkali cellulose crumbs in Step f) [d] are ripened to maturity of between 8° and 12° Hottenroth.

16. (Once amended) Process in accordance with Claim 1, characterized in that subsequent ripening of the cellulose in Step i) [g] is carried out to a maturity of between 8° and 12° Hottenroth.

17. (Once amended) Process in accordance with Claim 1, characterized in that the spinning solution downstream of the subsequent ripening of the cellulose and upstream of the filtration of the spinning solution is mixed with at least one other spinning solution produced using a process which comprises Steps a) to i) [g)] as described in claim 1.

18. (Once amended) Process in accordance with Claim 1, characterized in that the temperature of the regenerating bath in Step k) [i] is between 35°C and 45°C.

20. (Twice Amended) Process in accordance with Claim 1, characterized in that the regenerating bath in Step k) [i)] contains between 70 and 160 g/l of sulphuric acid.

21. (Twice Amended) Process in accordance with Claim 1, characterized in that the regenerating bath in Step k) [i)] contains between 0.3 and 4 g/l of zinc sulphate.

22. (Twice Amended) Process in accordance with Claim 1, characterized in that the regenerating bath in Step k) [i)] contains between 0.5 and 1 g/l of BEROL.

23. (Once amended) Process in accordance with Claim 1, characterized in that the spinnerets in Step k) [i] are heated to keep them at a temperature of between 55°C and 75°C.

25. (Once amended) Process in accordance with Claim 1, characterized in that the spinnerets in Step k) [i] are oval to long-slit-shaped.

26. (Once amended) Process in accordance with Claim 1, characterized in that dehydrating of the fibres in Step m) [k] is carried out with a sulphuric acid solution which contains up to 15 g/l of sulphuric acid.

28. (Once amended) Process in accordance with Claim 1, characterized in that desulphurisation of the fibres in Step n) [l] is carried out with a sodium sulphate solution which contains between 2 and 5 g/l of sodium sulphate.

31. (Once amended) Process in accordance with Claim 1, characterized in that the prehydrating of the fibres in Step p) [n] is carried out with compressed air.

32. (Once amended) Process in accordance with Claim 1, characterized in that the drying of the fibres in Step q) [o] is carried out under application of tunnel dryers.

33. (Twice Amended) Cellulose fibre, [obtainable] produced by a process in accordance with Claim 1.

43. (Twice Amended) Fabric comprising a backing fabric and a pile woven into the backing fabric, wherein the pile is comprised of [comprising] cellulose fibers formed by:

a) treating wood pulp derived from shoots no older than 1 year of deciduous trees or conifers with an alkali metal hydroxide solution in order to obtain an alkal[a]i cellulose;

b) pressing out the superfluous alkali metal hydroxide solution from the obtained alkali cellulose;

c) shredding the alkali cellulose into crumbs;

d) ripening the alkali cellulose crumbs to a maturity of between 5° and 30° Hottenroth;

e) employing a wet sulfide process to treat the ripened crumbs in order to sulfadize the cellulose;

f) rinsing and diluting the sulfadized cellulose with water in order to obtain a spinning solution;

g) subsequently ripening the rinsed and diluted cellulose to a maturity of between 5° and 30° Hottenroth;

h) filtering and deaerating the spinning solution

i) injecting the spinning solution into a regenerating bath under application of spinnerets;

j) stripping off the coagulating fibers with simultaneous twisting in order to obtain twisted fibers;

k) dehydrating the twisted fibers;

l) desulfurizing the twisted fibers;

m) washing the twisted fibers with water;

n) predehydrating the twisted fibers; and

o) drying the twisted fibers;

the fabric characterised in that the pile consists of 50% oval fibers and 50% tape fibers.

44. (Twice Amended) Fabric comprising a backing fabric and a pile woven into the backing fabric, wherein the pile is comprised of [comprising] cellulose fibers formed by:

a) treating wood pulp derived from shoots no older than 1 year of deciduous trees or conifers with an alkali metal hydroxide solution in order to obtain an alkal[a]i cellulose;

b) pressing out the superfluous alkali metal hydroxide solution from the obtained alkali cellulose;

c) shredding the alkali cellulose into crumbs;

d) ripening the alkali cellulose crumbs to a maturity of between 5° and 30° Hottenroth;

e) employing a wet sulfide process to treat the ripened crumbs in order to sulfadize the cellulose;

f) rinsing and diluting the sulfadized cellulose with water in order to obtain a spinning solution;

g) subsequently ripening the rinsed and diluted cellulose to a maturity of between 5° and 30° Hottenroth;

h) filtering and deaerating the spinning solution

i) injecting the spinning solution into a regenerating bath under application of spinnerets;

j) stripping off the coagulating fibers with simultaneous twisting in order to obtain twisted fibers;

k) dehydrating the twisted fibers;

l) desulfurizing the twisted fibers;

m) washing the twisted fibers with water;

n) predehydrating the twisted fibers; and

o) drying the twisted fibers;

the fabric characterized in that the pile consists of 50% of oval fibers with a count of 330 dtex F60 and 50% of tape fibers with a count of 300 dtex F80.

56. (Once amended) Process in accordance with Claim 1, characterized in that the regenerating bath in Step k) [i)] contains between 90 and 140 g/l of sulphuric acid.

57. (Once amended) Process in accordance with Claim 1, characterized in that the regenerating bath in Step k) [i)] contains approximately 120 g/l of sulphuric acid.

58. (Once amended) Process in accordance with Claim 1, characterized in that the regenerating bath in Step k) [i)] contains between 0.5 and 2 g/l of zinc sulphate.

59. (Once amended) Process in accordance with Claim 1, characterized in that the regenerating bath in Step k) [i)] contains approximately 1 g/l of zinc sulphate.